

REMARKS

Applicants appreciate the Examiner's thorough examination of the present application evidenced by the detailed Office Action, and the indication of the potential allowability of Claims 4, 9 and 28. In response to the indication of potential allowability, Applicants have amended Claim 4 to overcome the rejection under § 112, and have amended Claim 8 to incorporate recitations of Claim 9, thus placing Claims 4 and 8 in condition for allowance. Claim 9 has been canceled in view of the amendments to Claim 8.

Applicants respectfully traverse the rejections of Claims 1-3, 13,16-18, 20-21, 23-27, 29-39, and 42-44. In particular, Applicants traverse the rejections of independent Claims 1, 17 and 36 based on U.S. Patent No. 5,038,112 to O'Neill (hereinafter "O'Neill") for at least the reason that O'Neill fails to disclose or suggest, among other things, " first and second detector signals corresponding to forward *fundamental* and reflected *harmonic* components, respectively, of a power amplifier output signal produced by the power amplifier," as recited in Claim 1, or corresponding recitations from Claims 17 and 36. Reasons supporting patentability of the claims are discussed in detail below.

**Independent Claims 1, 17 and 36 are patentable over O'Neill**

Independent Claims 1, 17 and 36 stand rejected under 35 U.S.C. § 102 as anticipated by O'Neill. In rejecting Claim 1, the Office Action asserts that O'Neill discloses a detector circuit that "generates first and second detector signals corresponding to forward fundamental and reflected harmonic components of a PA output signal produced by the PA." Office Action, p. 3. Applicant respectfully disagrees.

Referring to FIG. 1 of O'Neill, O'Neill states:

The coupler 5, therefore, senses forward and reflected power with a sample of forward power appearing at terminal 10 of conductor 9b and a sample of reflected power appearing a terminal 11 of conductor 9b. The end 10 conductor 9b is terminated by resistance 12 and the end 11 is terminated in a resistance 13. . . . A forward power detector is provided including diode 14 and capacitor 16, with the anode of diode 14 coupled to terminal 10 of the coupler 5 and the cathode coupled at point 18 to one terminal of capacitor 16. The other terminals of capacitor 16 is coupled to ground or reference potential . . . Similarly, reflected power is detected via the detector provided by the diode 15 and capacitor 17 . . . Voltages  $V_{fwd}$  and  $V_{rev}$  are therefore derived at

points 18 and 19 which are proportional to the positive RF peaks of the respective forward and reflected power.

Although the above-quoted passage from O'Neill refers to detection of forward and reflected power, there is no disclosure or suggestion, here or elsewhere in O'Neill, of discrimination between *fundamental* and *harmonic* components. Thus, O'Neill fails to disclose or suggest, among other things, "a detector circuit, coupled to the transmission medium, that generates first and second detector signals corresponding to forward fundamental and reflected harmonic components, respectively, of a power amplifier output signal produced by the power amplifier," as recited in Claim 1, or corresponding recitations of Claims 17 and 36. Therefore, O'Neill does not disclose or suggest all of the recitations of Claims 1, 17, and 36 and, for at least this reason, Applicants submit that independent Claims 1, 17 and 36 are patentable over O'Neill.

#### **Independent Claim 20 is patentable over O'Neill and Pickett**

Independent Claim 20 stands rejected under 35 U.S.C. § 103 as being unpatentable over O'Neill in view of U.S. Patent No. 5,196,808 to Pickett et al. (hereinafter "Pickett"). Applicants respectfully traverse this rejection, as Pickett does not provide the teachings alleged by the Office Action, and because the Office Action provides insufficient evidence from the prior art of a motivation or suggestion to combine O'Neill and Pickett in the manner described in the Office Action.

The Office Action asserts that O'Neill teaches all of the recitations of Claim 20 except "how the control unit to connect to a radio section for controlling both the power amplifier and the radio section." Office Action, p. 6. The Office Action asserts that Pickett discloses a control unit that "includes a processor for controlling the level power of the PA and controlling the frequency synthesizer." Office Action, p. 6. The Office Action further asserts that "the processor of Pickett is inherently a baseband processor since it is used for modulating the input signal." Office Action, p. 6.

Pickett illustrates a circuit in which an automatic level control circuit 48 controls a voltage-controlled amplifier 14, which varies the level of a signal input to a power amplifier 16. The signal amplified by the voltage-controlled amplifier 14 is produced by the frequency synthesizer 12, which, as described in Pickett "provides the output carrier waveform at the appropriate frequency." Pickett, column 1, lines

62-63. A processor 46 "selects the appropriate frequency and modulation type for frequency synthesizer 12; the band pass filter settings of the PIN switches 21 and 22 for selecting filters 24-26 and the power output setting for ALC 48." Pickett, col. 2, lines 56-60.

Assuming that the Office Action is referring to the processor 46 as the "processor" included in the "control unit" referred to in the rejection of Claim 20, there is no indication that the processor 46 has any baseband processing function. For example, there is no indication that the processor "generates a data signal" that is provided to a modulator, as recited in Claim 20. Moreover, the Office Action provides no evidence that processor 46 is "inherently" a baseband processor. "To establish inherency, the extrinsic evidence must make clear that the missing descriptive matter *is necessarily present* in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. " M.P.E.P. § 2112 (citations omitted) (emphasis added). There appears to be no such evidence in Pickett or the other art of record. Accordingly, Applicants respectfully submit that Pickett does not provide the teachings alleged in the Office Action, and that the cited combination of O'Neill and Pickett does not disclose or suggest all of the recitations of Claim 20.

Moreover, the Office Action fails to provide adequate evidence from the prior art of a motivation or suggestion to combine O'Neill and Pickett. In particular, O'Neill describes a system in which a control signal  $V_c$  is provided to a power amplifier 3 to control its gain responsive to forward and reflected power measurements to control the power output of the amplifier 3. In contrast, Pickett describes controlling the output of a power amplifier 16 by controlling the amplitude of a carrier signal provided to the amplifier 16. The Office Action provides no evidence from the prior art as to why it might be desirable to fundamentally modify the approach shown in O'Neill (controlling the gain of the power amplifier) to that shown in Pickett (controlling the signal level applied to the input of power amplifier). The stated rationale, i.e., "in order to prevent power overload and destruction of the transmission circuitry" is a broad, conclusory statement of a goal that fails to indicate why, for example, modifying the arrangement in O'Neill - which already controls output power of the power amplifier -- would be a particular desirable way to achieve such a goal.

For at least the foregoing reasons, Applicants submit that Claim 20 is patentable over O'Neill and Pickett.

### **The dependent claims are patentable**

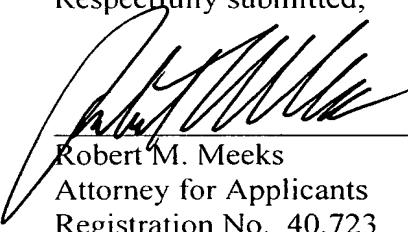
Applicants submit that dependent Claims 2, 3, 13, 16, 18, 21, 23-27, 30-39, and 42-44 are patentable at least by virtue of depending from various ones of patentable independent Claims 1, 17, 20, and 36. Applicants further submit that many of these dependent claims are separately patentable.

For example, Claim 16, which stands rejected as anticipated by O'Neill, recites "wherein the second detector signal comprises a plurality of second detector signals, respective ones of which correspond to respective harmonic components of the power amplifier output signal." An example of such a configuration is illustrated in FIG. 2 of the present application, and described on page 6 of the present application. The Office Action asserts "the second detector inherently generates a plurality of second detector signal since the power level of the reflected signal (for the second detector) is varied depending on the transmission power control in the PA." Office Action, p. 5. Respectfully, this bears little or no relevance to the subject matter of Claim 16, which relates to detection of multiple harmonic components. As noted above with reference to the rejections of Claims 1, 17 and 36, O'Neill does not provide any disclosure or suggestion of detecting *harmonic components*. For at least these additional reasons, Applicants submit that Claim 16 is patentable. Similar reasons support the separate patentability of Claims 35 and 42.

### **Conclusion**

Applicants have amended Claims 4 and 8 to place these claims in condition for allowance per the indication of allowability in the Office Action. Applicants further submit that the other claims are in condition for allowance for at least the reasons discussed above. Applicants, therefore, request allowance of the claims and passing of the application to issue in due course. Applicants encourage the Examiner to contact the undersigned by telephone to resolve any remaining issues.

Respectfully submitted,



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